COMPARATIVE STUDY ON QUALITY OF LIFE, OCCUPATIONAL RISK AND IMPACT OF SELECTED EDUCATIONAL INTERVENTION AMONG THE NURSES IN SELECTED HOSPITALS OF COIMBATORE AND BARGARH CITIES

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ABSTRACT

Nursing is a vital profession in the healthcare industry, yet nurses face multiple occupational risks that negatively affect their quality of life. A cross sectional study with purposive sampling was conducted among 600 nurses from four private multi-speciality hospitals in Coimbatore, Tamil Nadu (n=300) and Bargarh, Odisha (n=300), selected based on NITI Aayog's State Health Index (2020–2021), with the sample size determined using Yamane's (1967) formula. Data were collected using a validated and reliable questionnaire assessed by 17 subject experts through the Lawshe method, with strong content validity (I-CVI=1, S-CVI=0.93, kappa=1) and good internal consistency (Cronbach's α=0.76–0.83). For the interventional phase, a quasi-experimental design was adopted with 203 nurses identified as having high to very high occupational risk and poor Quality of Life. Most nurses were young adults aged 21–30 years; 51% of Coimbatore nurses held a bachelor's degree, while 60% in Bargarh held a diploma, with wards being the primary workplace and the majority earning Rs. 10,000–25,000 monthly. quality of life scores was significantly higher in Bargarh, with 87.6% reporting good quality of life compared to 58.6% in Coimbatore, while 70–80% in both cities reported moderately good work-related quality of life and work life balance. Occupational risk assessment revealed that Coimbatore nurses had higher biological risk exposure (44% high, 19% very high), while Bargarh nurses mostly fell into no to moderate risk categories (35%, 28%, 22%), with slightly higher physical and psychological risks in Bargarh (14%). Burnout prevalence was high, with 100% of Coimbatore nurses reporting overall burnout; common health problems such as headache, musculoskeletal disorders, and gastritis were equally observed in both cities. Higher occupational risk was associated with lower quality of life, particularly in Coimbatore, leading to rejection of the null hypothesis that quality of life is not associated with occupational risk and stress. The educational intervention focusing on occupational risk awareness and prevention, ergonomics, stress management with yoga, and healthy diets was delivered over three months (45–60 minutes per session), resulting in significant improvements in Knowledge, Attitude, and Practice (KAP) scores in Coimbatore (Knowledge: 19.3 ± 1.5 to 20.0 ± 0.0; Attitude: 72.4 ± 27.2 to 91.6 ± 9.1; Practices: 18.6 ± 3.2 to 20.0 ± 0.0) and Bargarh (Knowledge: 18.0 ± 2.7 to 20.0 ± 0.0; Attitude: 27.9 ± 8.4 to 94.4 ± 6.2; Practices: 14.6 ± 1.6 to 20.0 ± 0.0). These findings confirm the effectiveness of educational interventions in improving occupational health awareness, professional attitudes, and safe practices, providing evidence-based insights for hospital administrators and policymakers to reduce occupational risks, enhance work life quality, and promote the overall wellbeing of nurses in healthcare settings.

INTRODUCTION

A healthcare worker is a person who directly or indirectly provides care and services to the sick and ailing. Everyone who participates in initiatives meant to improve health outcomes are considered health workers. Health workers are essential to the proper operation of any health-care system (Bobby, 2016). They play an important role in ensuring everyone's right to health. In order to safeguard their own health, it is also critical that healthcare professionals have safe and healthy working environments. However, there are a lot of risks that health workers must deal with on the job (Health and Safety Executive, 2019).

The World Health Organization's National Health Workforce Accounts (NHWA) provides the latest data. It shows that in 2020, there were approximately 65.1 million health workers worldwide, including 29.1 million nurses (Boniel, 2022). Nursing is a vital profession in the health care industry, including community healthcare, clinics, hospitals and health camps. The primary concept of nursing is prevention, which focuses on protecting the health of healthy people in society through preventive health education and activities.

Quality of life is a broad and complex concept that reflects individuals' perceptions of their physical, psychological, social, and environmental wellbeing. Since work significantly shapes these domains, work related quality of life refers to how individuals perceive various aspects of their jobs, including pay, safety, working conditions, and workplace relationships. Unlike job satisfaction, which focuses mainly on contentment with one's role, work-related quality of life also encompasses wider factors such as stress, health, and overall well-being (Fradelos, 2021).

There was not much research and much less literature found in India about the factors that affected the quality of life of nurses. Factors contributing to nurses' work-life imbalance have not been investigated well. Although there is a great deal of evidence for healthcare providers' factors affecting quality of life in developed countries, India's subject was lacking. Therefore, this researcher investigated nurse's quality of life and the factors affecting their quality of life in selected hospitals in India. This study aims at assessing the nurse's quality of life and their level of exposure to occupational risks which compromise their health. This study would help the nursing leaders to plan nurses' friendly policies and protocols which would enhance the nurse's quality of life and protect them from exposing to various occupational risk during clinical practice which would in turn positively improve their general health

RESEARCH GAP

- Several studies have focused on assessing the quality of life among nurses; however, these studies have typically examined the issue in isolation, without drawing comparisons between nurses from different states with high-performing versus low-performing healthcare systems.
- To date, there is a paucity of research examining the factors influencing the quality of life and occupational safety of nurses of two different states of India.

NEED FOR THE STUDY

- Nurses are the backbone of the healthcare system. They play a key role in caring for patients and maintaining public health. However, their quality of life is often affected by the work environment and exposure to occupational risks (Mondal,2023).
- Fatigue and Occupational stress are closely linked to reduced quality care and heightened risk of making mistakes, posing risks to both nurses and patients. Suboptimal working conditions further compromise their quality of life, leading to dissatisfaction, absenteeism and staff turnover (Mersal, 2025).

Addressing these risks through targeted strategies are essential to protect nurses' wellbeing, improve patient safety and to strengthen workforce retention.

OBJECTIVES

Primary Objective

To study the Quality of Life and its association with socio-economic status, occupational risk, occupational stress and perceived health problems among the nurses in selected hospitals of Coimbatore and Bargarh cities.

Secondary Objectives

- To study the Socio-economic status of nurses in selected hospitals of Coimbatore and Bargarh cities.
- To assess the occupational health risk of nurses in selected hospitals of Coimbatore and Bargarh cities.
- To categorize the quality of life, occupational risk and occupational stress of nurses in selected hospitals of Coimbatore and Bargarh cities.
- To study the occupational stress and burnout syndrome among nurses in selected hospitals of Coimbatore and Bargarh cities.
- To assess the impact of selected educational intervention on Knowledge, Attitude and Practices on occupational Risk among nurses in selected hospitals of Coimbatore and Bargarh cities.

HYPOTHESIS

1. **H_0:** The Quality of Life is not significantly associated with socio-economic profile, perceived health problems, biological and non-biological occupational risk and occupational stress of the selected nurses of Coimbatore and Bargarh cities.
2. **H_0:** There is no significant difference between before intervention and after intervention on Knowledge, Attitude and Practices towards occupational risk among selected nurses of Coimbatore and Bargarh cities.

METHODOLOGY

The methodology of the study is conducted under the following phases

Phase 1: Formulation, Validation of Questionnaire and Assessment of Socio-Economic Status of Selected Nurses

- A cross-sectional study design was adopted for the present study to assess the Quality of Life and Occupational Risk of nurses at one point of time.
- Through a purposive sampling technique, about 600 nurses were selected from different private hospitals of Coimbatore city (n=300) of Tamil Nadu and Bargarh city(n=300) of Odisha.
- According to the statistical guidance provided by the statistician, the Yamane et al., (1967) the sample size formula was used to fix the sample size. A total population of 1450 nurses in Coimbatore and 750 nurses in Bargarh. The sample size was resulted as 311 and 260 in Coimbatore and Bargarh respectively. However, after rejecting incomplete questionnaires and involving more volunteers. The sample size was rounded to n=300 for equal distribution of samples in study area. Further, based on the inclusion and exclusion criteria, the samples were included in the study.
- Ethical approval for the present study was obtained from the Institutional Human Ethical Committee of Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu (**AUW/IHEC/WS-21-22/XPD-02**).
- A well-structured Questionnaire was formulated with the help of existing literature, which was then given for content validation to fifteen subject experts by Lawshe method by four steps such as Construction of Questionnaire, Determination of 'essentiality of items', Validation of Questionnaire and Determination of Internal Consistency of Questionnaire.
- The background information of the selected nurses is interviewed under three subheadings such as personal profile, professional profile and employee welfare.

PHASE 2: Assessment of Quality of Life, Work Related Quality of Life and Work Life Balance

- The WHOQOL-BREF tool was used for the purpose of assessing the quality of life of selected nurses. This tool was widely used for cross-cultural quality of life comparisons available in various languages. It consists of 26 items that assess well-being in four domains: physical, psychological, social and environmental.
- The researcher obtained the WHOQOL-BREF tool licensed from the World Health Organization (WHO/HIS/HSI Rev.2012.03). The same tool was used to assess quality of life. Based on WHOQOL-BREF (1997) selected nurses rated each item on a 1 to 5 scale, which was then transformed to a 0-100 scale for standardized measurement based on the following conversion formula and WHOQOL Syntex
- After the conversion of raw scores of Quality of Life, the selected nurses of Coimbatore and Bargarh was categorized into Poor (0 – 33.3), Average (33.4 – 66.7) and Good (>66.7) based on mean transformed scores obtained in four domains namely physical, psychological, social and environmental domain with 24 questions based on the study by Phan et al., (2021) who assessed the factors affecting Quality of Life among general population.

- The work-related quality of life is assessed by an adapted questionnaire by Easton and Laar (2013). It consists of 24 questions, from which the study adapts 12 questions related to the study objective and relevancy.
- The work-life balance self-assessment scale for nurses by Smeltzer et al. (2016) was adapted for this study. It consists of 15 questions, of which five were adapted, such as the assessment on flexible timing and work sharing, facilities for releasing work pressure, availability of separate policy for work life balance, availability of time-to-time health programs and healthy foods at work workplace.

PHASE 3: Assessment of Occupational Risk of Selected Nurses

- Occupational risks in healthcare settings are generally categorized into biological and nonbiological health risk reflecting the wide range of exposures encountered by healthcare workers.
- Biological risk domain included the assessment of exposure to needle or sharp objects injuries, body fluids, blood-borne infections and drug-resistant infections.
- The non-biological domain involved a detail on various sub-domains such as ergonomical aspects, workplace violence, psychological and social
- The well-structured, validated and reliable questionnaire was utilized for data collection. Based on the suggestion from the statistician, the occupational risks, both biological and non-biological risks was categorized on the scale of five exposures, namely no risk to very high risk categorized based on Yan et al., (2025), depending on the mean score obtained, ie, 1 to 1.4 (no risk exposure).
- Occupational stress was assessed using Nurses Stress Scale (1981) from which 10 items were adapted with five-point Likert scaling (1 – Never to 5 – Always).
- Burnout was assessed using Copenhagen Burnout Inventory (2005), which had 19 questions under three categories such personal burnout, work-related and patient-related burnout syndrome, with five-point Likert scaling (1 – Never to 5 – Always).
- Subsequently, the selected nurses are also encouraged to provide their perceived health problems. A list of health problems was asked to fill out to interpret whether it affects their overall Quality of Life.

PHASE 4: Impact of Selected Educational Intervention Program on Knowledge, Attitude and Practices among the Selected Subsample

- This phase of the study involved in formulation of a structured tool to assess the Knowledge, Attitude and Practices on occupational risk among selected nurses.
- The tool was designed in three sections as Knowledge, Attitude and Practices. It included questions categorized under five domains, namely ‘Infection in the Hospitals’, ‘Chemical and Radiation Risk’, ‘Extreme Temperatures and Noises’, ‘Ergonomics’ and ‘Occupational Stress’.
- Quasi-experimental research design was used to find the impact of selected educational intervention. For the intervention, the sub-sample was obtained from the study sample of n=300 selected nurses whose quality of life is poor with high occupational risk.

- The educational intervention for enhancing the Knowledge, Attitude and Practices on Occupational risk included on four different domains such as awareness on occupational risk and prevention, ergonomics, stress management and yoga and healthy dietary habits and lifestyle modifications.
- Each intervention module was planned continuously for three months with two sessions held per week. These sessions also involved interaction with experts such as physiotherapists, psychologist, yoga therapist and dietitians for effectiveness. The leaflets were distributed by the researcher, imparting their need and importance.
- The wholesome of the intervention session was planned in accordance with improving the knowledge, attitude and practices to prevent occupational risks involved in the nursing occupation. Each session lasted 45–60 minutes and included 15–20 nurses. In total, 24 sessions were conducted.
- With an interval of about one to two weeks, the efficacy of the planned targeted intervention was assessed through post post-test by using the same KAP tool.
- Knowledge, Attitude and Practices had 20 questions each and it was scored as poor knowledge (Score: 0-7), medium or average knowledge (Score: 8-15) and a score of 16-20 is considered as good knowledge.
- The nurses were categorized to have positive attitude, neutral attitude and negative attitude, if they scored 16 – 20, 8 – 15 and 0 – 7, respectively.
- A score of one was given for each right answer, consolidating, a score between 0-10 was considered poor practice and 11-20 as good practices regarding occupational risk.

RESULTS AND DISCUSSION

PHASE 1: Formulation, Validation of Questionnaire and Assessment of Socio-Economic Status of Selected Nurses

- Occupational health hazard assessment was developed with two domains namely biological and non -biological risk with 33 items whereas for assessing perceived health problems with 15 items.
- The content validity was evaluated using item-level content validity index (I-CVI) and Scale-level content validity index (S-CVI), whereas kappa statistics were used for assessing the inter-rater reliability.
- Items related to needle injuries and sharp objects and repetitive body movements (CVR = 1) were unanimously deemed highly relevant by experts. Similarly, Moderate agreement was found for items such as exposure to blood and body fluids, long periods of standing and walking during duty (CVR = 0.73), suggesting that these risks are commonly recognized but may vary based on the work environment.
- The items under designed to identify the perceived health problems due to occupational exposure. Notably, items such as musculoskeletal problems, Varicose veins (CVR=0.867) achieved high content validity ratio scores, indicating that these conditions are viewed as particularly relevant, linked to the physical demands of nursing work, whereas items with moderate agreement included headache, respiratory allergies and hypertension (CVR=0.7).

- Each item in the questionnaire scored an I-CVI of 1, which indicates that every item was rated as ‘relevant’ or ‘highly relevant’ by all experts (N=17).
- The constructed questionnaire had scored scale level content validity of 0.93, which exceeds the 0.80 of the commonly accepted thresholds, indicating majority of the items have scored highly relevant to the intended construct without redundancies.
- A kappa value of 1 signifies perfect agreement beyond chance among the subject experts, demonstrating that experts consistently agreed on the relevance of each item. This agreement strengthens the reliability of the content validity scores by reducing the chance or probability, also indicates the robustness of the constructed questionnaire.
- The findings of the Kaiser Meyer Olkin measure of sample adequacy of 0.860, providing a higher suitability for factor analysis. Four components were extracted from the non-biological domain of the constructed questionnaire, having factor loadings higher than 0.4.
- Component 1: Emotional distress, Component 2 and 4: Ergonomic risks, Component 3: Environmental exposures are like the domain structure of constructed questionnaire thus it also confirms the validity of the questionnaire.
- Most of the selected nurses were in the young adult 21 to 30 years of age, in both Coimbatore (77%) and Bargarh (88%) cities and they were unmarried (78%).
- Most of the nurses were from the nuclear family system (68%). The distribution of the presence of ailing members in the family had significant differences over two selected study areas, with a p-value less than 0.001; a higher number of nurses (42.7%) had ailing members in their family than nurses of Bargarh (24.7%).
- About 11 to 13 percent of nurses in Coimbatore had one or two children, while ten percent of nurses in Bargarh had only one child and a few had two children. In Coimbatore city, about 80 nurses had grown children at home.
- Among them, 21 percent expressed that their children lack security at home. Whereas in Bargarh city, only five percent reported that they lack security for their grown children.
- About half of the selected nurses (51 percent) from Coimbatore city had a bachelor's degree, followed by selected nurses with a diploma in general nursing and midwifery (46%), whereas about 60 percent of nurses of Bargarh city had a diploma as their professional qualification, underscoring the significant difference over the selected study area.
- Ward was the area of work for most of the selected nurses of Coimbatore(63.3percent) and Bargarh city (55.7percent).
- The economic status reveals that, majority of the selected nurses of both Coimbatore and Bargarh earn a monthly income of Rs. 10,000 to 25,000, followed by Rs. 25,001 to 50,000.
- The comparative analysis of facilities among selected nurses of Coimbatore and Bargarh city reveals a significant disparity. While both study areas reported the availability of basic amenities like washrooms and free Hepatitis B vaccination, selected nurses of Coimbatore city showed markedly better access to welfare facilities such as free refreshments (57%) and creche services (41%).

PHASE 2: Assessment of Quality of Life, Work Related Quality of Life and Work Life Balance

- The World Health Organization Quality of Life BREF tool was used to collect their responses. The tool contained 26 questions which were categorized as general wellbeing, physical, psychological, social and environmental domains.
- The findings show that the selected nurses of Bargarh city (4.14±0.85, 4.13±0.76) had significantly higher mean scores than the selected nurses of Coimbatore city, with t values of 3.63 and 4.4, respectively, for perception of quality of life and health satisfaction.
- It shows that the selected nurses of Bargarh city had significantly better general well-being than the selected nurses of Coimbatore city.
- The selected nurses of Coimbatore reported to have 'neither poor nor good Quality of Life' and 'neither satisfied nor dissatisfied on health' whereas, selected nurses of Bargarh had 'good Quality of Life and satisfied with their health'.
- Similarly, the highest mean raw scores of the physical health domain were obtained by selected nurses of Bargarh city (29.48±4.03) in comparison to selected nurses of Coimbatore city (25.42±6.03) with a t value of 9.7 at a 99 percent level of significance.
- Specifically, the questions like ability to get around, sleep satisfaction, satisfaction with day-to-day activities, satisfaction with capacity to work also recorded with higher mean scores by selected nurses of Bargarh city of Odisha, with t value ranges from 7.6 to 10 at a 99 percent level of significance and transformed to 0 to 100 by using WHOQOL BREF Syntex.
- As general well-being and physical health domain, the psychological health score was also found with a significant difference while the highest mean score was recorded at Bargarh city.
- Questions such as satisfaction with personal relationships and supportive friends, are scored as 'satisfied to very much satisfied'. The high mean raw score was obtained by the selected nurses of Bargarh (9.08±1.58) with a t value of 9.99 at 95 percent statistical significance.
- This is because in Coimbatore city, most of them migrants from other parts of Tamil Nadu, away from their families. Cultural/language differences may reduce social bonding and social isolation is common.
- In contrast, though many stay away from families in Bargarh, they live in a community with colleagues who share similar struggles. Collective bonding reduces loneliness. Cultural homogeneity creates a strong support system.
- The environmental domain encompasses about eight questions investigating the perceived experiences of safety and a healthy environment with all necessities; among the selected nurses of Coimbatore city, the questions, such as availability of information (2.53±1.39) and availability of money (2.61±1.42), were found with lower mean scores compared to other questions.
- Based on the classification given by Phan et al. (2021), the WHO Quality of Life BREF tool was categorized.
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- Notably, working hours per week had no significant association in either study area (Coimbatore: $\chi^2 = 5.799$, Bargarh: $\chi^2 = 2.487$). Thus, null hypothesis (**H_0:** The Quality of Life is not significantly associated with socioeconomic profile) was rejected for both selected nurses of Coimbatore and Bargarh cities.
- The work-related quality of life among selected nurses of Coimbatore was good. Most nurses reported clarity in job goals (91.3%), effective use of abilities (92.7%) and good personal well-being (82%). High satisfaction in areas like career growth (81.7%), training (85.4%) and managerial support (77.7%). However, involvement in decision making was comparatively lower, with only 57.3 percent, as most of the nurses had less than three years of experience. Overall, 78 percent of selected nurses in Coimbatore were satisfied with their working life.
- The work-related quality of life among selected nurses of Bargarh city was also good, with most selected nurses reporting clarity in job goals (86.7%), effective use of abilities (87.3%) and good personal well-being (81.4%). A high proportion felt encouraged to learn new skills (85.6%), were satisfied with training (79.6%) and working conditions (74.6%).
- However, only 54.3 percent felt involved in decision making, with 27.7 percent disagreeing, indicating a gap in participatory practices. Career satisfaction was moderate (73%) and overall work satisfaction stood at 71.4 percent. These findings support the idea that a supportive and participatory work environment plays a crucial role in improving nurses' job satisfaction and overall well-being.
- The assessment of work-life balance among nurses in Coimbatore city reflects a moderately positive outlook, while 70 percent acknowledged flexible timing and work sharing. About 57.6 percent felt supported in managing work pressure, with only 56 percent reporting awareness of a specific work-life balance policy, suggesting gaps in communication or implementation. Though 70.6 percent noted the presence of health programs, few strongly agreed (11.3%), implying limited impact. Additionally, only 56 percent reported access to healthy food at work.
- The assessment of work-life balance among selected nurses of Bargarh city reveals moderate satisfaction. While 65 percent reported flexible timing and sharing the work with others, only 52.3 percent felt supported in managing work pressure and just 49.3 percent acknowledged a formal work-life balance policy. Although 69.7 percent agreed on the presence of health programs, strong endorsement was low (9%), suggesting limited engagement. Access to healthy food was reported by 52.4 percent.

PHASE 3: Assessment of Occupational Risk of Selected Nurses

- The well-structured, validated and reliable Questionnaire was utilized for data collection.
- Based on the suggestion from the statistician, the occupational risk, both biological and non - non-biological risks, are categorized depending on the mean score obtained, on a scale of five exposures, namely no risk to very high risk.

- Biological hazard domain included the assessment of exposure to needle or sharp objects injuries, body fluids, blood-borne infections and drug-resistant infections. This domain provides a detailed perspective on biohazard exposure.
- In both study areas, Coimbatore and Bargarh cities, most of the selected nurses reported that they had never been exposed to needles and sharp objects (58.3%, 61.3%). Similarly, exposure to blood and bloody fluids was reported frequently in both Coimbatore and Bargarh city by ten to 12 percent of selected nurses.
- A similar trend is observed in the case of frequent exposure to infectious and blood-borne diseases, with 17 percent of selected nurses of Coimbatore city affected compared to 15.7 percent in Bargarh city.
- Regarding drug-resistant infections, 42 percent of nurses in Coimbatore reported frequent (always) exposure, in stark contrast to 12.3 percent in Bargarh.
- Overall, these findings reveal that nurses in Coimbatore are more frequently exposed to occupational risk, including needle stick injuries, blood and body fluid exposure, infectious diseases and drug-resistant infections, compared to their counterparts in Bargarh city.
- Non-biological domain involved a detail on various sub-domains such as ergonomical aspects, workplace violence, psychological, social and occupational stress. The selected nurses were investigated on the frequency of exposure to repetitive body movements, standing and walking for long periods, painful position during work under ergonomical risk, whereas exposure to extreme temperature, noise, chemicals and radiation were investigated under the subdomain of exposure to extreme conditions.
- In Coimbatore city, a high proportion of selected nurses reported frequent exposure to musculoskeletal risk, with 47.7 percent always exposed to repetitive body movements, 59.3 percent to prolonged standing, 56 percent to extensive walking during duty hours and 34 percent reported adopting painful positions while working.
- Comparable levels of exposure were observed in Bargarh city, with 36.8 percent, 55.7 percent, 62.7 percent and 25.7percent of nurses reporting similar exposures respectively, indicating a consistently high physical workload across both settings.
- Exposure to environmental physical risk such as extreme temperatures, noise, radiation and chemical agents was more prevalent among selected nurses of Bargarh city compared to Coimbatore city.
- A significant proportion of the selected nurses of Coimbatore city reported never experiencing external psychological risk: 80.3 percent had never faced bullying; 72.7 percent had not experienced discrimination and 91.3 percent reported no incidents of unwanted sexual attention.
- In contrast, the selected nurses of Bargarh reported a slightly higher psychological burden across several domains. Approximately 14.7 percent of nurses stated they were always exposed to bullying or harassment in the workplace, while 11.3 percent reported frequent experiences of discrimination. Notably, 21.7 percent of Bargarh nurses acknowledged experiencing insensitivity towards others.
- Based on the categories given by Yan et al., (2025), the occupational risk was categorized into No risk to Very high risk. Most of selected nurses of Coimbatore city are distributed

with high and very high biological risk (44%, 19%), whereas, selected nurses of Bargarh city had no risk to moderate biological risk (35%,28%,22%).

- A high prevalence of burnout syndrome among selected nurses of both Coimbatore and Bargarh, with 100 percent experiencing high overall burnout, was recorded.
- Specifically, patient-related burnout was high (100%) in both study areas, indicating a significant emotional toll from patient care responsibilities. Work-related burnout was slightly more prevalent in Bargarh (92%) than in Coimbatore (88.7%), while personal burnout was similarly high in both regions (Coimbatore 88%, Bargarh 91%).
- Statistical analysis was done to assess the association between perceived health problems and Quality of Life among the selected nurses of Coimbatore and Bargarh city. The findings show
- Significant associations between specific health problems such as headache (χ^2=9.839**), musculoskeletal disorders (χ^2=18.655**), gastritis (χ^2=10.66**), respiratory allergies (χ^2=18.032**) and varicose veins (χ^2=10.389*) and perceived Quality of Life in Coimbatore City. However, these associations were not recorded in Bargarh city.
- Thus, null hypothesis (H_0: The Quality of Life is not significantly associated with perceived health problems) was rejected for selected nurses of Coimbatore and accepted for selected of Bargarh.
- Consequently, domain-specific comparison of mean scores of Quality of Life with Occupational risks was done by applying One-way ANOVA.
- Among the selected nurses of Coimbatore city, physical domain scores declined significantly from 66.8 ± 15.24 at moderate risk to 45.7 ± 25.6 at very high risk.In contrast, the selected nurses of Bargarh city reported a relatively high score of 85.1 ± 11.5 at very high risk, with no significant variation across risk levels.
- The selected nurses of Coimbatore city exhibited a pronounced decline in psychological well-being, with scores decreasing from 75.5 ± 18.23 to 34.1 ± 31.99 as biological risk increased. The selected nurses of Bargarh city demonstrated stable psychological domain scores across risk categories, with no statistically significant differences observed.
- Among the selected nurses of Coimbatore city, social domain scores dropped markedly from 78.0 ± 24.9 to 32.9 ± 38.73 with increasing biological risk.The selected nurses of Bargarh city maintained consistent social domain scores across all risk levels, indicating minimal impact.
- Environmental domain scores for the selected nurses of Coimbatore city declined substantially from 68.12 ± 15.19 to 31.3 ± 27.95 at very high risk. In contrast, the selected nurses of Bargarh city exhibited relatively stable environmental scores, irrespective of biological risk level.
- The findings indicate a statistically significant deterioration ($p < 0.01$) across all Quality of Life domains among the selected nurses of Coimbatore city with increasing levels of biological occupational risk. Conversely, the selected nurses of Bargarh city showed no significant changes in Quality of Life, suggesting regional variations in risk perception, resilience, or institutional support mechanisms.

- The analysis of quality of life in relation to biological and non-biological health risks, as well as occupational stress, reveals a notable disparity between the selected nurses of Coimbatore and Bargarh city.
- In Coimbatore city, biological health risks showed a strong association with perceived Quality of Life (χ^2=115.007**), with a higher proportion reporting very high risk (12.7%) among those with poor Quality of Life, whereas, in Bargarh city, though a significant association was not observed (χ^2=11.555), most participants with good Quality of Life fell in the 'no risk' (32%) or 'low risk' (24.7%) categories.
- Under Non-biological risks, the association was significant in both Coimbatore (χ^2=18.909**) and Bargarh (χ^2=37.494**), with higher risk levels affecting those with better Quality of Life in Coimbatore, while in Bargarh, lower risk levels were more common among those with good Quality of Life. Occupational stress showed a significant association in Coimbatore (χ^2=14.193*).
- High occupational stress was even observed with good Quality of Life. However, in Bargarh, the relationship was not significant (χ^2=1.668), with low stress more frequently reported among those with good Quality of Life (73% nurses).
- Thus, null hypothesis (H_0: The Quality of Life is not significantly associated with biological and non-biological occupational risk and occupational stress) was rejected for selected nurses of Coimbatore. Whereas, for selected nurses of Bargarh, null hypothesis (H_0: The Quality of Life is not significantly associated with non-biological occupational risk) was rejected.

PHASE 4: Impact of Selected Intervention Programme on Knowledge, Attitude and Practices towards Occupational Risk among the Selected Subsample

- Quasi-experimental research design was used find the impact of educational intervention schedule. A one-group pre- and post-test design was utilized. Pre-test and post-test designs evaluate changes in knowledge or attitudes by measuring dependent variables before and after an intervention
- The subsample of nurses N=203 (102 nurses from Coimbatore and 101 nurses from Bargarh cities) was selected based on their quality of life and occupational risk scores. For the intervention phase, nurses with poor to average Quality of Life scores and moderate to very high occupational risk scores were selected based on eligibility and informed consent. Participation was voluntary, with some nurses expressing personal interest in improved well-being.
- More than 90 percent of the selected subsample nurses from both Coimbatore and Bargarh cities were between 21 and 30 years of age. Most of the nurses in Coimbatore held a bachelor's degree (77%), while in Bargarh, most had a diploma in General Nursing and Midwifery (56%). All selected participants were employed as ward nurses. In terms of experience, 89 percent of the nurses in Coimbatore and 73 percent in Bargarh had one to three years of service.

- The educational intervention for enhancing the Knowledge, Attitude and Practices on Occupational risk included four different domains, such as awareness on occupational risk and prevention, body mechanisms and physiotherapy exercises.
- Researcher developed seven modules on the following topics: occupational Risk, ergonomics for nurses, patient moving and shifting, stress management, yoga, healthy nurses, healthy nation, healthy exercises for nurses were carefully formulated for training sessions with leaflets on occupational risk prevention, body mechanics for nurses, individual wellness and workplace violence.
- Each intervention module was planned for 45-60 minutes continuously for three months. These sessions also involve interaction with experts such as physiotherapists and dietitians for effectiveness.
- Post-intervention analysis revealed a total improvement in occupational risk-related knowledge among the selected nurses of both Coimbatore and Bargarh cities. In Coimbatore, the overall knowledge score increased from 19.3 ± 1.5 to 20.0 ± 0.0 ($t = -4.99$, $p < 0.01$).In Bargarh, the selected nurses demonstrated a greater magnitude of change, with scores rising from 18.0 ± 2.7 to 20.0 ± 0.0 ($t = -7.29$, $p < 0.01$)
- Statistically significant enhancements in attitude towards occupational risks were observed in both study groups following the intervention. Among the selected nurses of Coimbatore city, the overall attitude score increased from 72.4 ± 27.2 to 91.6 ± 9.1 ($t = 9.77$, $p < 0.01$). The selected nurses of Bargarh city, starting with a lower baseline score of 27.9 ± 8.4, exhibited a substantial post-test increase to 94.4 ± 6.2 ($t = -71.85$, $p < 0.01$).
- The implementation of the intervention led to significant improvements in the adoption of safe occupational health practices across both groups. In Coimbatore, the overall practice score increased from 18.6 ± 3.2 to 20.0 ± 0.0 ($t = -4.24$, $p < 0.01$), The selected nurses of Bargarh city, with a lower baseline score of 14.6 ± 1.6, demonstrated a substantial improvement post-intervention to 20.0 ± 0.0 ($t = -32.99$, $p < 0.01$).
- The intervention led to a marked improvement in the Knowledge, Attitude and Practices (KAP) scores among selected nurses of both Coimbatore and Bargarh cities.
- In Coimbatore, nurses with “good” knowledge increased from 97 percent to 100 percent and positive attitudes rose from 65.6 percent to 99 percent, with complete elimination of negative attitudes and near elimination of neutral attitudes post-intervention. In Bargarh, "good" knowledge rose from 74.3 percent to 100 percent and all nurses shifted from negative (75.2%) and neutral (24.8%) attitudes to 100 percent positive post-intervention.
- Good practice scores improved from 97 percent to 100 percent in Coimbatore and remained at 100 percent in Bargarh after the intervention.
- These findings reflect a successful enhancement of occupational health awareness, attitudes and professional behaviours among the selected nurses. Thus, rejecting the null hypothesis (H_0: There is no significant difference between before intervention and after intervention on Knowledge, Attitude and Practices towards occupational risk) for both selected nurses of Coimbatore and Bargarh cities.

SUMMARY AND CONCLUSION

Occupational health is a multidisciplinary field that prioritizes workplace safety and risk prevention. It aims to protect workers from accidents, injuries, and diseases, with nurses being among the most vulnerable healthcare professionals due to their elevated occupational risks.

- This study aims to assess the quality of life and its association with occupational health risk among nurses in selected hospitals of Coimbatore and Bargarh city. The purposive sampling technique was used to select about 600 nurses from different private hospitals of Coimbatore district (n=300) of Tamil Nadu and Bargarh district (n=300) of Odisha using Yamane et al., (1967).
- The data collection tool (Questionnaire) was validated by Lawshe method and it is robust, valid and reliable.
- Most of the selected nurses were in the young adult 21 to 30 years of age. Ward was the area of work for most of the selected nurses.
- Based on the classification given by Phan et al. (2021), Quality of Life was categorized, In Coimbatore and Bargarh city, 58.6% and 87.6% of nurses experienced a good quality of life.
- Further, based on the categories given by Yan et al., (2025), the occupational risk was categorized. Most of selected nurses of Coimbatore city are distributed with high and very high biological risk (44%, 19%), whereas, selected nurses of Bargarh city had no risk to moderate biological risk (35%,28%,22%).The higher the occupational risk, the poorer and lower the mean scores of quality of life among selected nurses of Coimbatore.
- The intervention led to a marked improvement in the Knowledge, Attitude and Practice (KAP) scores among selected nurses of both Coimbatore.

The study provides evidence-based insights for hospital administrators and policymakers to reduce occupational risks, enhance work-life quality, and promote the overall well-being of nurses, which is essential not only for their health but also for ensuring safe, effective, and high-quality patient care.

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